



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,787	05/20/2002	Claudia Wiegand	MERCK 2341	5718
23599	7590	03/30/2006	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			OLSEN, ALLAN W	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/031,787

Applicant(s)

WIEGAND ET AL.

Examiner

Allan Olsen

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4,5,7-14 and 17-26 is/are pending in the application.  
4a) Of the above claim(s) 8-13 and 20-26 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 4,5,7,14 and 17-19 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 11 March 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Specification***

The disclosure is objected to because of the following informalities:

On page 3, line 35, "BBSG" should read --BPSG--.

Appropriate correction is required.

***Election/Restrictions***

Newly submitted claims 20-26 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: New claims 20-26 and the examined group of claims, (i.e., claim 17 and claims dependent thereon) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination (claims 20-26) as claimed does not require the particulars of the subcombination as claimed because the combination does not require that the composition has the property of etching the doped oxide BSG at a much higher rate than it etches thermal oxide, thus being capable of essentially not etching thermal oxide while etching said doped oxide. The subcombination has separate utility such as serving as the etchant in a process that etches silicon oxide from a substrate that is void of a doped silicate layer.

Art Unit: 1763

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 20-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**Claims 18 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.**

The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The specification teaches a hydrofluoric acid content of 5-20%, however, there does not appear to be support for a composition comprising either 10 % or 15 % HF in combination with a solvent mixture consisting essentially of at least two of ethylene glycol, propylene glycol, ethanol, and glycerol.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1763

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 4, 5, 7, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckert.**

Deckert teaches HF/glycerol and HF/ethylene glycol compositions. Deckert teaches preparing an etching solution by adding 100 mL of concentrated HF (49% HF by weight) to glycerol to make 1 liter of solution. Deckert teaches that this solution is 3M in HF. Therefore, the 1 L of solution contains 3 moles of HF, which is about 60 grams of HF. Because a 49% HF solution has a density of 1.19 g/mL, the 100 mL of concentrated HF that Deckert adds to glycerol contributes 119 grams to the total mass of the solution. The balance of the solution is ~ 900 mL of glycerol which, given its density of 1.26 g/mL, would have a mass of about 1134 grams. These numbers (e.g.,  $60 \text{ g HF} / (119 + 1134) \approx 5\%$ ) provide for HF and H<sub>2</sub>O concentrations that correspond to the claimed ranges.

Deckert does not teach mixing ethylene glycol and glycerol with a ratio of 1:5 to 5:1.

Art Unit: 1763

It would have been obvious for one skilled in the art to make the etching solution of Deckert with a 1:1 mixture of glycerol and ethylene glycol because "[i]t is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose."<sup>1</sup>

Deckert does not teach using high purity components in the etching mixture.

It would be obvious to use high purity components so that the etching solution is not a source of contamination.

While Deckert does not teach that the etches doped oxide BSG at a much higher rate than it etches thermal oxide, and that the solution is capable of essentially not etching thermal oxide while etching said doped oxide, these features are considered inherent in the composition made obvious by Deckert.

**Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckert in view of US Patent 5,767,020 issued to Sakaguchi et al. (hereinafter, Sakaguchi).**

The above noted teachings of Deckert are herein relied upon. Additionally, it is noted Deckert teaches that the concentration of the etching composition is not critical, and Deckert adds, in general a more concentrated solution provides a faster etch rates (column 3, lines 22-25). Furthermore, Deckert teaches that a criterion for selecting the

---

*In re Kerkhoven* 205 USPQ 1069 (CCPA 1980). Cites *In re Susi* 169 USPQ 423, 426 (CCPA 1971); *In re Crockett* 126 USPQ 186, 188 (CCPA 1960). See also *Ex parte Quadranti* 25 USPQ 2d 1071 (BPAI 1992).

Art Unit: 1763

organic component of the etchant is that the organic component must be compatible with the HF and water (column 3, lines 13-18).

Deckert does not teach a composition comprising 10-20% HF.

Sakaguchi teaches an etching composition comprising a mixture of 5-95% HF and an alcohol.

It would have been obvious for one skilled in the art to increase the HF concentration to 15-20% HF because Deckert teaches that high concentrations provide higher etching rates and Sakaguchi demonstrates that alcohols are compatible with very high HF concentrations.

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive.

With respect to Deckert, Applicant argues, that the composition of Deckert and applicant's claimed composition have different intended uses. Deckert's composition is for etching oxide and nitride whereas "Applicant's solution is for etching layers of BSG, BPSG, PSG and not thermal oxide. Thus Deckert cannot motivate any changes directed to such an etching application."

The examiner notes applicant's claims are directed to a composition, not to a method of etching any particular type of oxide. The intended use of applicant's composition is not relevant to the patentability of the composition.

Applicant argues that Sakaguchi is irrelevant because it does not teach solvent mixtures and therefore does not cure the deficiency of Deckert.

The examiner disagrees because Deckert teaches: 1) the concentration of the etching composition is not critical; 2) a more concentrated solution provides a faster etch rates (column 3, lines 22-25); and 3) the organic component of the etchant must be compatible with the HF. As such, Sakaguchi is not irrelevant because Sakaguchi teaches that the alcohols used by Deckert are compatible with HF concentrations of up to 95%.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



Art Unit: 1763

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M-F 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Allan Olsen', with a stylized circular flourish at the end.

Allan Olsen  
Primary Examiner  
Art Unit 1763